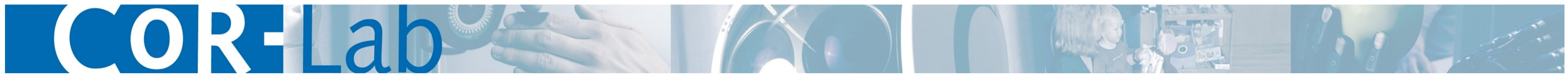


Impact of Real-time Visual Attention on Computer Vision Products and Cognitive Robotics

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Introduction

- Attention helps us focus on the most relevant sensory input while suppressing the others.
- Visual attention directs the focus to the most significant part of the scene.



Fig 1. Illustration of the Focus of Attention on a Cricket Scene by the model proposed in [1]

Commercial Applications

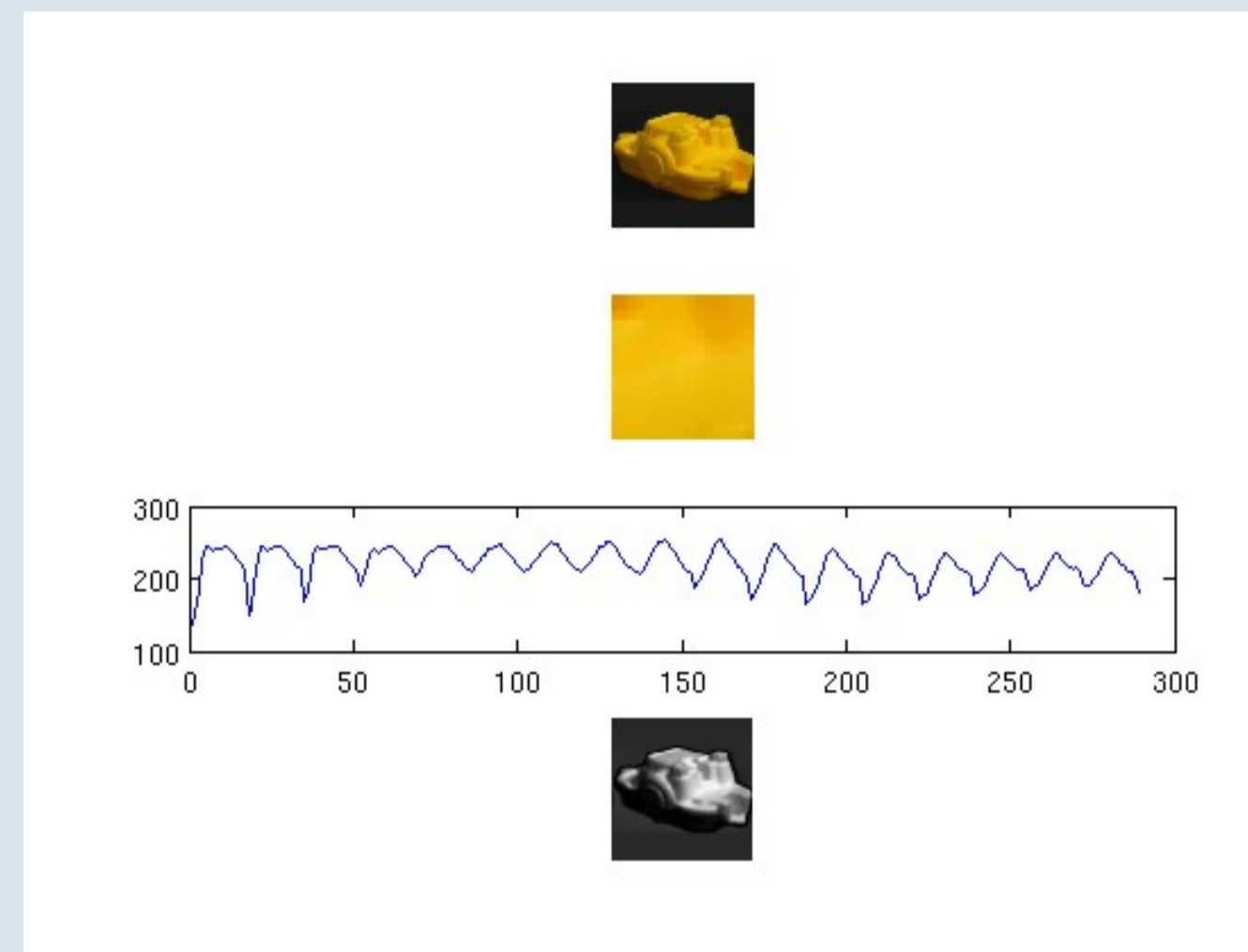


Fig 2. Object Representation and Recognition



Fig 3. Advertisement analysis
Photo: <http://tobil.posterous.com/3m-visual-attention-service-vs-real-eye-track>

Several computational models of visual attention have been proposed [2, 3], and here are its practical applications.

Applications yet to be commercialized

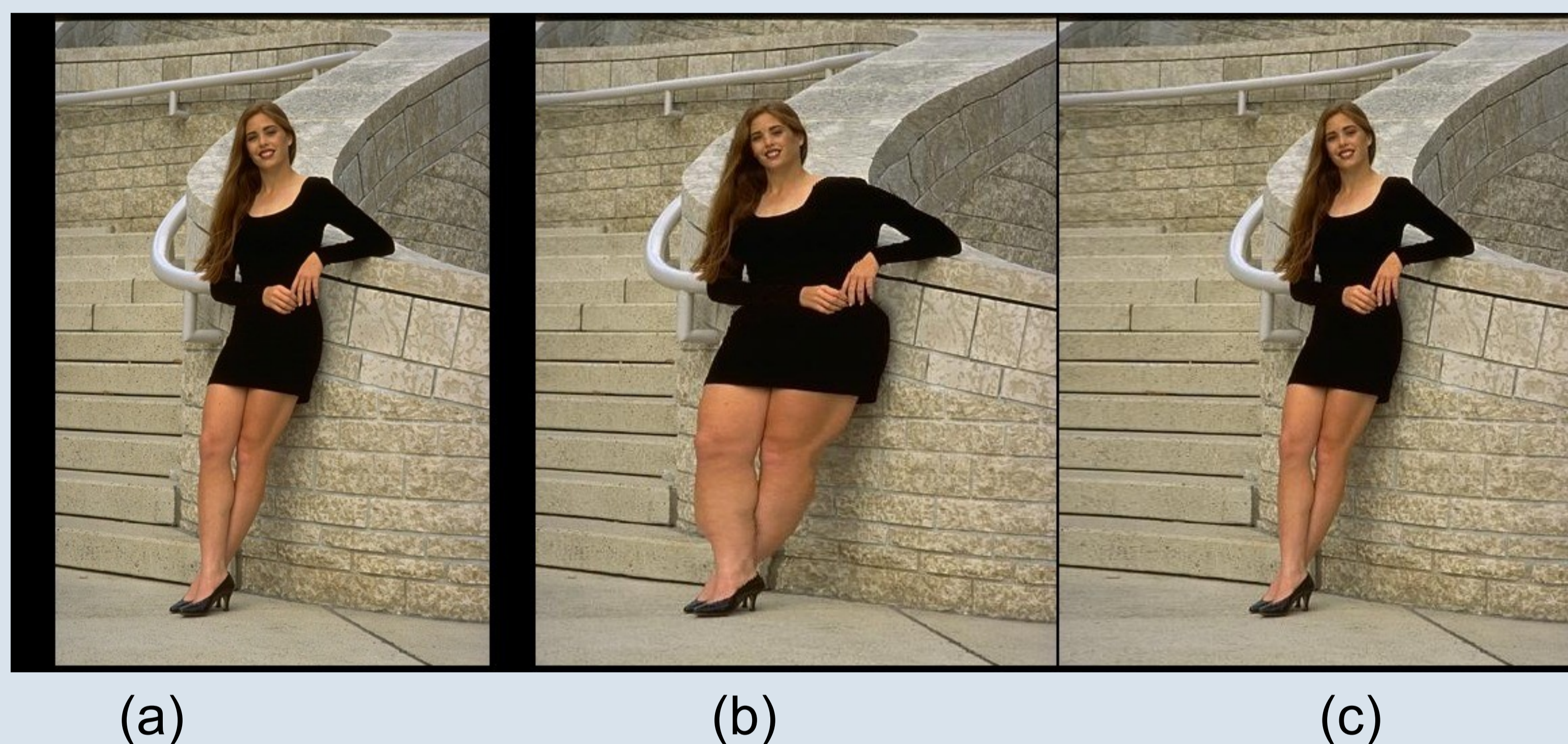
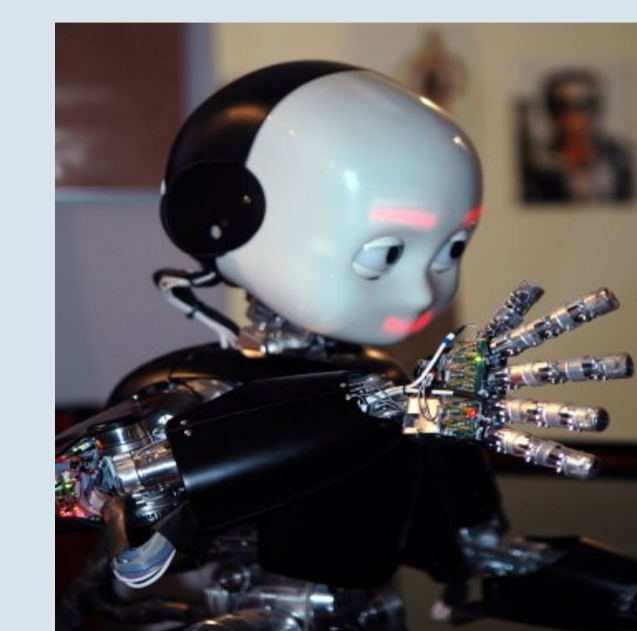


Fig 4. Original image (a), image enlargement without visual attention component (b), Enlargement with Visual Attention (c) [3].



Obstacle avoidance for mobile robots, as prominent obstacles can be detected by a visual attention model [4]



Visual attention models can also be used to control eye-gaze for humanoid robots

Applications to Learning and Interaction

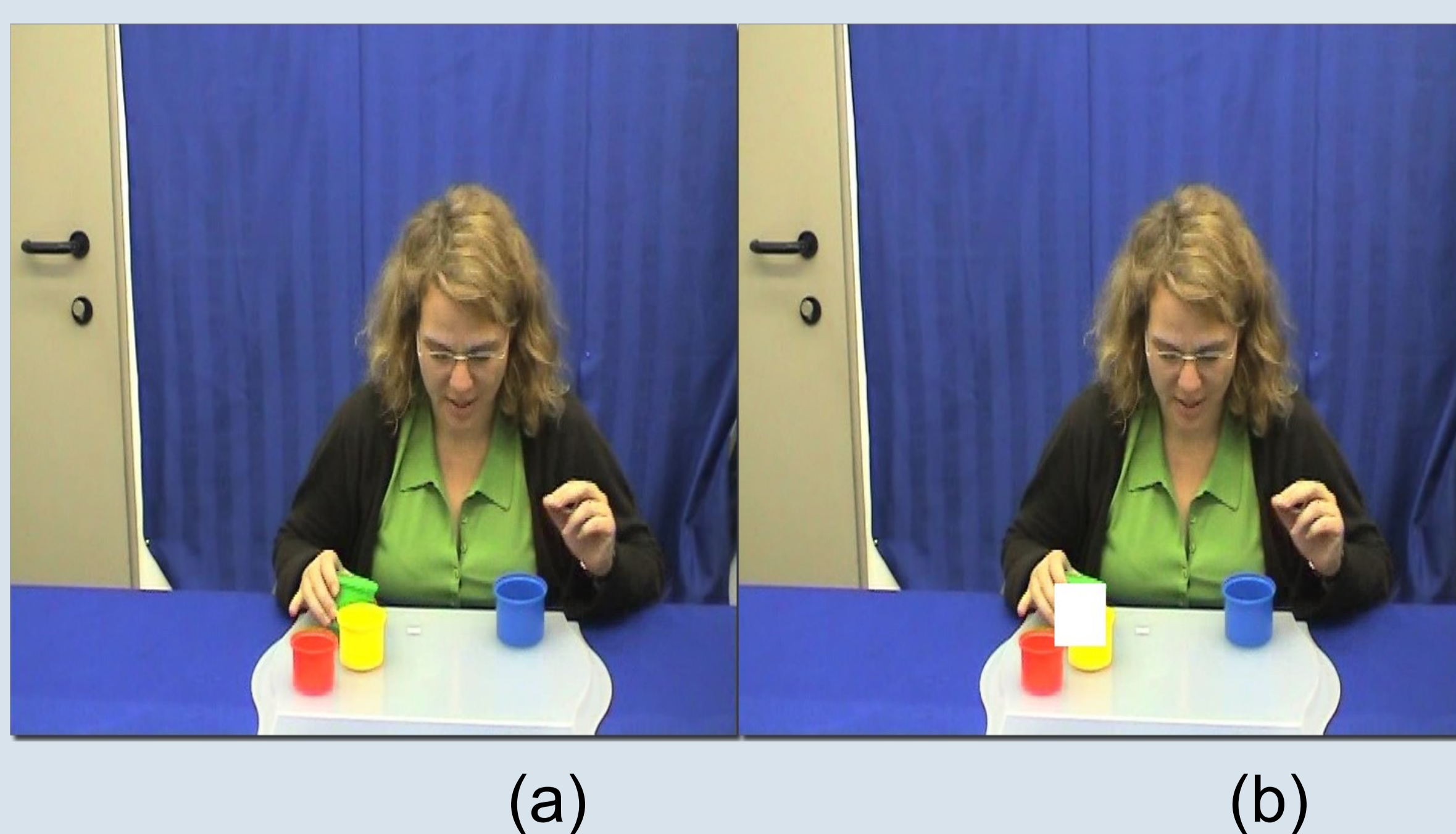


Fig 5. Original Image (a), Detected Focus of Attention highlighted by a white square (b).

This helps in focusing the robot's attention to meaningful regions of the scene during a conversation.

Conclusion

Real world applications of Visual Attention are still in a nascent stage, and a lot of potential for commercialization exists.

References

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